

WAR DEPARTMENT.

INFORMATION RELATIVE TO THE APPOINTMENT AND ADMISSION OF CADETS TO THE UNITED STATES MILITARY ACADEMY.

[Communications relating to matters connected with the Military Academy should be addressed to The Adjutant General of the Army, Washington, D. C.]

APPOINTMENTS.

How made.—Each congressional district and Territory—and also Porto Rico—is entitled to have 1 cadet at the academy. Each State is also entitled to have 2 cadets from the State at large; 2 are allowed from the District of Columbia, and 40 are allowed from the United States at large. The law, however, provides that for six years from July 1, 1910, whenever any cadet shall have finished three years of his course at the academy his successor may be admitted. The appointment from a congressional district is made upon the recommendation of the Representative in Congress from that district, and those from a State at large upon the recommendations of the Senators of the State. Similarly, the appointment from a Territory is made upon the recommendation of the Delegate in Congress. The appointments from the District of Columbia are made on the recommendation of the Commissioners of the District. Each person appointed must be an actual resident of the State, District, or Territory from which the appointment is made.

The appointments from the United States at large are made by the President of the United States upon his own selection. The cadet from Porto Rico, who must be a native of that island, is appointed by the President on the recommendation of the Resident Commissioner.

The Secretary of War is authorized to permit not exceeding 4 Filipinos, to be designated, 1 for each class, by the Philippine Commission, to receive instruction at the United States Military Academy at West Point: *Provided*, That the Filipinos undergoing instruction, shall receive the same pay, allowances, and emoluments as are authorized by law for cadets at the Military Academy appointed from the United States, to be paid out of the same appropriations: *And provided further*, That said Filipinos undergoing instruction on graduation shall be eligible only to commissions in the Philippine Scouts. And the provisions of section 1321, Revised Statutes, are modified in the case of the Filipinos undergoing instruction, so as to require them to engage to serve for eight years, unless sooner discharged, in the Philippine Scouts.

Date of appointments.—Appointments are required by law to be made *one year in advance* of the date of admission, except in cases where, by reason of death or other cause, a vacancy occurs which can not be provided for by such appointment in advance. These vacancies are filled in time for the next examination.

Candidates.—For each vacancy *three candidates* should be nominated, one of the candidates to be named as *principal*, one as *first alternate*, and one as *second alternate*. The first alternate, if qualified, will be admitted in the event of failure of the principal; the second alternate, if qualified, will be admitted in the event of the failure of the principal and the first alternate.

Each candidate will receive from the War Department a letter of appointment, and he must appear for examination at the time and place designated therein.¹

Fitness for admission will be determined as prescribed in the Regulations, United States Military Academy.

EXAMINATION AND ADMISSION OF CANDIDATES.

The following are extracts from the Regulations of the Military Academy relating to the examination of candidates for admission and will be strictly adhered to:

On the third Tuesday in March of each year candidates selected for appointment (except the Filipino candidates) shall appear for mental and physical examination before boards of Army officers to be convened at such places as the War Department may designate. The Filipino candidates selected for

¹ The board before which a candidate is directed to appear will be, without exception, the one convened at the place nearest or most convenient to his home, or to the school at which he is in regular attendance at the time of appointment.

appointment, unless otherwise notified by the War Department, shall appear for mental and physical examination on the second Tuesday in January of each year before a board of Army officers to be convened at such place in the Philippine Islands as the Commanding General of the Philippines Division may designate. Candidates who pass will be admitted to the academy without further examination upon reporting in person to the superintendent before 12 o'clock noon, on the 14th day of June following the examination, or 15th if the 14th falls on Sunday.

Each candidate before admission to the academy, must show by examination as prescribed in the preceding paragraph, that he is well versed in algebra, to include quadratic equations and progressions, plane geometry, English grammar, composition, and literature, descriptive and physical geography, and general and United States history, as explained in the circulars of notification. No rejected candidate shall be reexamined, except upon recommendation of the academic board.

A candidate for admission to the United States Military Academy from a State, District, or Territory may be excused by the academic board from the mental examination for admission upon one of the following conditions:

1. That he present a properly attested certificate that he is a regularly enrolled student in good standing without condition in any university, college, or technological school accredited by the United States Military Academy: *Provided*, That the entrance requirements for the course he is pursuing in such institution require proficiency in subjects amounting to 14 units of the college entrance examination board which must include mathematics A_1 (algebra to quadratics), A_2 (algebra, quadratics and beyond) and C (plane geometry); English A (reading and practice) and B (study and practice), as outlined by the college entrance examination board. A certificate indicating enrollment at an irregular time or for the specific purpose of obtaining such certificate will not be accepted.

2. That he present a properly attested certificate of graduation from a preparatory school or public high school which is on the accredited list of one of the institutions referred to in paragraph 1 of this order, provided that he is thus certified to have established proficiency in subjects amounting to 14 units of college entrance examination board, which must include mathematics A_1 , A_2 , and C, and English A and B, as outlined by the college-entrance examination board. A certificate indicating graduation at an irregular time for the specific purpose of obtaining such certificate will not be accepted.

3. That he present a properly attested certificate from the college-entrance examination board that he has passed 14 units of its examinations, including mathematics A_1 , A_2 , and C, English A and B, and history A (ancient history) and D (American history and civil government).

EXTRACTS FROM REPORT OF COLLEGE-ENTRANCE EXAMINATION BOARD.

UNIT OF ADMISSION REQUIREMENTS.

In order to facilitate the comparison of admission requirements with one another, the board has given its approval to the following statement, formulated by the National Conference Committee on Standards of Colleges and Secondary Schools, descriptive of a unit of admission requirements:

A unit represents a year's study in any subject in a secondary school, consisting approximately of a quarter of a full year's work.

This statement is designed to afford a standard of measurement for the work done in secondary schools. It takes the four-year high school course as a basis, and assumes that the length of the school year is from 36 to 40 weeks, and that a period is from 40 to 60 minutes in length, and that the study is pursued for four or five periods a week; but under ordinary circumstances, a satisfactory year's work in any subject can not be accomplished in less than 120 sixty-minute hours or their equivalent. Schools organized on any other than a four-year basis can, nevertheless, estimate their work in terms of this unit.

The following scale of values of admission requirements in terms of units, recommended by the Carnegie Foundation for the Advancement of Teaching, has received the indorsement of the college-entrance examination board:

Units.		Units.		Units.	
English A.....	2	Latin B.....	1	German A.....	2
B.....	1	C.....	1	B.....	1
History A.....	1	D.....	1	C.....	1
B.....	1	Greek A ₁	$\frac{1}{2}$	Spanish.....	2
C.....	1	A ₂	$\frac{1}{2}$	Mathematics A ₁	1
D.....	1	B.....	1	A ₂	$\frac{1}{2}$
Latin 1*.....	1	C.....	1	B.....	1
2*.....	1	CH.....	1	C.....	1
3*.....	2	F.....	$\frac{1}{2}$	D.....	$\frac{1}{2}$
4*.....	1	French A.....	2	E.....	$\frac{1}{2}$
5*.....	1	B.....	1	Music A.....	1
6*.....	$\frac{1}{2}$	C.....	1	B.....	1
Physics.....	1	Geography.....	1		
Chemistry.....	1	Zoology.....	1		
Botany.....	1	Drawing.....	1		

* As a tentative assignment of values, 1, 2, 4, and 5 are counted as one unit each, 3 as two units, and 6 as one-half unit; but 3 has no assigned value unless offered alone, 1, 2, and 6 have no assigned values unless offered with 4 and 5, and in no case is the total requirement to be counted as more than four units.

It is understood that this assignment of values will be reconsidered after the requirements have had a year or two of trial.

Detailed definitions of requirements in each subject in which the board holds examinations * * * are given in a circular of information, published by the board each year about December 1.

Teachers, parents, and candidates for examination who desire more specific information concerning the work of the board, as well as those who wish to procure blank forms of application for examination, are requested to address—

“College Entrance Examination Board, Post Office, Substation 84, New York City, N. Y.”

Candidates desiring to present any of the foregoing certificates will make application for blank forms to the “Adjutant, U. S. Military Academy, West Point, N. Y.,” and cause the return of the form, duly filled out and attested, to the same address as soon as practicable and *not later than February 15*. Candidates accepted upon certificate in lieu of the mental examination must appear for physical examination at the time and place designated in their letters of appointment.

Engagement to serve.—Immediately after reporting to the superintendent for admission and before receiving their warrants of appointment candidates are required to sign in the presence of the superintendent, or of some officer deputed by him, engagements for service in the following form:

I, ———, of the State (or Territory) of ———, aged ——— years, ——— months, do hereby engage (with the consent of my parent or guardian) that from the date of my admission as a cadet of the United States Military Academy I will serve in the Army of the United States for eight years unless sooner discharged by competent authority.

In the presence of ———.

In the case of the Filipino cadets the engagement shall be made to serve in the Philippine Scouts. (See sec. 1321, R. S.)

Oath of allegiance.—Each cadet shall, previous to his admission to the academy, take and subscribe an oath or affirmation in the following form:

I, ———, do solemnly swear that I will support the Constitution of the United States and bear true allegiance to the National Government; that I will maintain and defend the sovereignty of the United States paramount to any and all allegiance, sovereignty, or fealty I may owe to any State, county, or country whatsoever, and that I will at all times obey the legal orders of my superior officers and the rules and articles governing the Armies of the United States. (Sec. 1320, R. S.)

Sworn to and subscribed at ——— this ——— day of ———, nineteen hundred and ———, before me.

Qualifications.—No candidate shall be admitted who is under 17 or over 22 years of age or less than 5 feet 4 inches in height at the age of 17 or 5 feet 5 inches in height at the age of 18 and upward or who is deformed or afflicted with any disease or infirmity which would render him unfit for the military service or who has, at the time of presenting himself, any disorder of an infectious or immoral character. Candidates must be unmarried.

Each candidate must on reporting at West Point present a certificate showing successful vaccination within one year; or a certificate of two vaccinations made at least a month apart, within three months.

NOTE.—Candidates are eligible for admission from the day they are 17 until the day they become 22 years of age, on which latter day they are not eligible.

Each candidate designated as principal or alternate for appointment as cadet at the Military Academy should ascertain as soon as practicable whether or not he has any physical defect that would disqualify him for admission to the academy or any that should be corrected by treatment previous to presenting himself for examination. For this purpose he should immediately cause himself to be examined by his family physician, and, if he desires, also by an Army surgeon at the nearest military post. Such an examination should enable the candidate to decide whether to devote the time and possible expense which may be necessary for preparation for the entrance examination or to relinquish his appointment.

It should be understood that the informal examination herein recommended is solely for the convenience and benefit of the candidate himself, and can in no manner affect the decision of the academic and medical examining boards.

CHARACTER OF EXAMINATIONS.

PHYSICAL EXAMINATION.

Upon the completion of the mental examination all candidates will be thoroughly examined physically by the medical officers of the board under the following instructions prepared by the Surgeon General of the Army: Candidates excused from the mental examination as above described will be physically examined by the medical officers of the examining boards as soon as practicable after they report at the place of examination.

Hearing must be normal in both ears.

Vision as determined by the official test types must not fall below 20/40 in either eye and not below 20/20 unless the defect is a simple refractive error not hyperopia, is not due to ocular disease, and is entirely corrected by proper glasses.

In the record of all examinations the acuity of vision without glasses and also with glasses when the acuity is less than 20/20 will be given for each eye separately; in the latter case the correction will also be noted.

Hyperopia requiring any spherical correction, anisometropia, squint, or muscular insufficiency, if marked, are causes for rejection.

Color blindness, red, green, or violet, is cause for rejection.

Teeth.—A candidate must have at least four serviceable double (bicuspid or molar) teeth, two above and two below, and so opposed as to serve the purpose of mastication.

Loss of many teeth or teeth generally unsound is also cause for rejection. In the latter case, however, a candidate may be accepted subject to the condition of having cavities filled and mouth put in good sanitary condition by the date set for his arrival at West Point.

The following are causes of disqualification if found to exist to such a degree as would immediately or at no very distant period impair the efficiency of the candidate:

1. Feeble constitution; unsound health from whatever cause; indications of former disease, glandular swellings, or other symptoms of scrofula.
2. Chronic cutaneous affections, especially of the scalp.
3. Severe injuries of the bones of the head; convulsions.
4. Impaired vision, from whatever cause; inflammatory affections of the eyelids; immobility or irregularity of the iris; fistula lachrymalis, etc.
5. Deafness; copious discharge from the ears.
6. Impediment of speech.
7. Want of due capacity of the chest, and any other indication of a liability to a pulmonic disease.
8. Impaired or inadequate efficiency of one or both of the superior extremities on account of fractures, especially of the clavicle, contraction of a joint, deformity, etc.
9. An unusual excurvature or incurvature of the spine.
10. Hernia.
11. A varicose state of the veins of the scrotum or spermatic cord (when large), hydrocele, hemorrhoids, fistulas.
12. Impaired or inadequate efficiency of one or both of the inferior extremities on account of varicose veins, fractures, malformation (flat feet, etc.), lameness, contraction, unequal length, bunions, overlying or supernumerary toes, etc.
13. Ulcers or unsound cicatrices of ulcers likely to break out afresh.

The requirements of the following tables of physical proportions are *minimum for growing youths* and are for the guidance of medical officers in connection with the other data of the examination, a consideration of all of which should determine the candidate's physical eligibility. Mere fulfillment of the requirements of the standard tables does not determine eligibility, while on the other hand no departure below the standard should be allowed unless upon the unanimous recommendation of the medical examining board for excellent reasons clearly stated in each case.

The physical requirements should be those of the age at the birthday nearest the time of the examination. Fractions greater than one-half inch will be considered as an additional inch of height but candidates 17 years old must be at least 64 inches, and those 18 years and upward at least 65 inches in height.

Table of physical proportion for height, weight, and chest measurement.

Age.	Height.	Weight.	Chest measurement—expiration.	Chest mobility.	Age.	Height.	Weight.	Chest measurement—expiration.	Chest mobility.
	<i>Inches.</i>	<i>Pounds.</i>	<i>Inches.</i>	<i>Inches.</i>		<i>Inches.</i>	<i>Pounds.</i>	<i>Inches.</i>	<i>Inches.</i>
17 years...	64	110	29	2	20 years...	65	122	31	2
	65	112	29 $\frac{1}{4}$	2		66	124	31 $\frac{1}{4}$	2
	66	114	29 $\frac{1}{2}$	2		67	126	31 $\frac{1}{2}$	2
	67	116	29 $\frac{3}{4}$	2		68	130	31 $\frac{3}{4}$	2 $\frac{1}{2}$
	68	119	30	2 $\frac{1}{2}$		69	134	32	2 $\frac{1}{2}$
	69	122	30 $\frac{1}{4}$	2 $\frac{1}{2}$		70	138	32 $\frac{1}{4}$	2 $\frac{1}{2}$
	70	125	30 $\frac{1}{2}$	2 $\frac{1}{2}$		71	142	32 $\frac{1}{2}$	2 $\frac{1}{2}$
18 years..	71	128	30 $\frac{3}{4}$	2 $\frac{1}{2}$		72	146	32 $\frac{3}{4}$	3
	65	117	30 $\frac{1}{4}$	2		73	150	33	3
	66	119	30 $\frac{1}{2}$	2		74	154	33 $\frac{1}{4}$	3 $\frac{1}{2}$
	67	121	30 $\frac{3}{4}$	2	21 years..	65	123	31 $\frac{1}{2}$	2
	68	124	31	2 $\frac{1}{2}$		66	125	31 $\frac{1}{2}$	2
	69	127	31 $\frac{1}{2}$	2 $\frac{1}{2}$		67	127	31 $\frac{3}{4}$	2
	70	130	31 $\frac{1}{2}$	2 $\frac{1}{2}$		68	132	32	2 $\frac{1}{2}$
	71	133	31 $\frac{3}{4}$	2 $\frac{1}{2}$		69	137	32 $\frac{1}{4}$	2 $\frac{1}{2}$
	72	136	32	3		70	142	32 $\frac{1}{2}$	2 $\frac{1}{2}$
						71	147	32 $\frac{3}{4}$	2 $\frac{1}{2}$
19 years...	65	121	30 $\frac{3}{4}$	2		72	152	33	3
	66	123	31	2		73	157	33 $\frac{1}{4}$	3
	67	125	31 $\frac{1}{2}$	2		74	162	33 $\frac{1}{2}$	3 $\frac{1}{2}$
	68	129	31 $\frac{1}{2}$	2 $\frac{1}{2}$		75	167	33 $\frac{3}{4}$	3 $\frac{1}{2}$
	69	133	31 $\frac{3}{4}$	2 $\frac{1}{2}$	22 years..	65	125	31 $\frac{1}{2}$	2
	70	137	32	2 $\frac{1}{2}$		66	127	31 $\frac{3}{4}$	2
	71	141	32 $\frac{1}{4}$	2 $\frac{1}{2}$		67	129	32	2
	72	145	32 $\frac{1}{2}$	3		68	134	32 $\frac{1}{4}$	2 $\frac{1}{2}$
	73	149	32 $\frac{3}{4}$	3		69	139	32 $\frac{1}{2}$	2 $\frac{1}{2}$
						70	144	32 $\frac{3}{4}$	2 $\frac{1}{2}$
						71	149	33	2 $\frac{1}{2}$
						72	154	33 $\frac{1}{4}$	3
						73	159	33 $\frac{1}{2}$	3
						74	164	33 $\frac{3}{4}$	3 $\frac{1}{2}$
						75	169	34	3 $\frac{1}{2}$
						76	174	34 $\frac{1}{4}$	4

MENTAL EXAMINATION.

Algebra.—Candidates will be required to pass a satisfactory examination in that portion of *algebra* which includes the following range of subjects: Definitions and notation; the fundamental laws; the fundamental operations, viz: Addition, subtraction, multiplication, and division; factoring; highest common factor; lowest common multiple; fractions, simple and complex; simple, or linear, equations with one unknown quantity; simultaneous simple, or linear, equations with two or more unknown quantities; graphical representation; involution, including the formation of the squares and cubes of polynomials; binomial theorem with positive integral exponents; evolution, including the extraction of the square and cube roots of polynomials and of numbers; theory of exponents; radicals, including reduction and fundamental operations, rationalization, equations involving radicals; operations with imaginary numbers; quadratic equations; equations of quadratic form; simultaneous quadratic equations; ratio and proportion; arithmetical and geometrical progressions. Candidates will be required to solve problems involving any of the principles or methods contained in the foregoing subjects.

The following questions were used at a recent examination:

- (a) Simplify $[(x-y)^2+6xy]-[(x^2+2xy)-\{x^2-[2xy-(xy-y^2)]\}-(-x^2-2xy)]$.
(b) Factor (1) $a^3b^3+64c^6$ (2) x^2-y^2-2y-1 (3) x^3-3x^2+4 .
- Solve $\sqrt{\frac{4}{x^2}+5}-\sqrt{\frac{4}{x^2}-5}=2$. Prove that your answers are correct.
- How many terms will there be in the expansion of $(a^{\frac{1}{10}}+b^{\frac{1}{3}})^{16}$ by the binomial formula?
Write the 6th term in the simplest form. What other term will have the same coefficient?
Write down this term and simplify it.
- A number of workmen, who receive the same wages, earn together a certain sum. Had there been 7 more workmen, and had each one received 25 cents more, their joint earnings would have increased by \$18.65. Had there been 4 fewer workmen, and had each one received 15 cents less, their joint earnings would have decreased by \$9.20. How many workmen are there, and how much does each one receive?
- (a) Find the value of $5x^3+2x^2-3x-1$ when $x=1-\sqrt{-4}$.
(b) Simplify $\left(\sqrt[5]{x^{\frac{4}{3}}}\right)^{-\frac{3}{2}}$.
- Two trains run toward each other from A and B, respectively, and meet at a point which is 15 miles farther from A than it is from B. After the trains meet, it takes the first train $2\frac{1}{3}$ hours to run to B, and the second $3\frac{1}{3}$ hours to run to A. How far is it from A to B?
- Solve $\begin{cases} \left(\frac{1}{a}+\frac{1}{b}\right)x+\left(\frac{1}{a}-\frac{1}{b}\right)y=4 \\ \frac{x}{a+b}+\frac{y}{a-b}=2 \end{cases}$
- (a) Deduce a test for finding when the roots of the equation $ax^2+bx+c=0$ are: 1° real and unequal; 2° real and equal; 3° imaginary; 4° numerically equal with contrary signs.
(b) Apply the tests to find the nature of the roots of the equations
1° $3x^2+4x-10=0$
2° $5x^2+6=0$
- Given a square whose side is 2. The middle points of its adjacent sides are joined by straight lines forming a second square inscribed in the first. In the same manner, a third square is inscribed in the second, a fourth in the third, and so on indefinitely. Find the sum of the perimeters of all the squares.
Substitute for any of the above.—A person has \$6,500, which he divides into two portions and lends at different rates of interest, so that the two portions produce equal returns. If the first portion had been lent at the second rate of interest, it would have produced \$180; and if the second portion had been lent at the first rate of interest, it would have produced \$245. Find the rates of interest.

Plane geometry.—Candidates will be required to give accurate definitions of the terms used in *plane geometry*, to demonstrate any proposition of plane geometry as given in the ordinary textbooks and to solve simple geometrical problems either by a construction or by an application of algebra.

The following questions were used at a recent examination:

- Theorem: The three medians of any triangle intersect in a common point which is at two-thirds of the distance from each vertex to the middle of the opposite side.
- Theorem: If two triangles have their three sides respectively equal, the triangles are equal in all respects.
- (a) How many circles can be drawn tangent to three given straight lines? (b) Problem: To draw a circle through a given point and tangent to two given straight lines.
- Theorem: If two parallel right lines be divided into corresponding parts, proportional each to each, and straight lines be drawn through the corresponding points of division, these straight lines will pass through a common point.
- Exercise: Find the locus of all points, the sum of the squares of the distances of any one of which from two fixed points is equal to a given square.
- Problem: Given two circles, to construct a third circle equivalent to their difference.
- Exercise: If the radius of a circle is 5, find the area of the segment subtended by the side of a regular hexagon.

8. Theorem: The areas of two triangles which have an angle of the one equal to an angle of the other, are to each other as the products of the sides including those angles.
9. Problem: Through a given point on one side of a triangle to draw a right line which shall divide the triangle into two equivalent areas.
- Substitute for any one of the above.—(a) Define *commensurable quantities*; *incommensurable quantities*. Give example of each. (b) Theorem: In the same circle or equal circles, two angles at the centre, have the same ratio as their intercepted arcs (whether commensurable or incommensurable).

English grammar.—Candidates must have a good knowledge of *English grammar*; they must be able to define the terms used therein; to define the parts of speech; to give inflections, including declension, conjugation, and comparison; to give the corresponding masculine and feminine gender nouns; to give and apply the ordinary rules of syntax.

They must be able to parse correctly any ordinary sentence; giving the subject of each verb, the governing word of each objective case, the word for which each pronoun stands or to which it refers, the words between which each preposition shows the relation, precisely what each conjunction and each relative pronoun connects, what each adjective and adverb qualifies or limits, the construction of each infinitive, and generally to show a good knowledge of the function of each word in the sentence.

They must be able to correct in sentences or extracts any ordinary grammatical errors.

It is not required that any particular textbook shall be followed; but the definitions, parsing, and corrections must be in accordance with good usage and common sense.

The following questions indicate the character of the examination:

- (a) He comes, the herald of a noisy world. (b) Next anger rushed, his eyes on fire. (c) Get on your nightgown, lest occasion call us and show us to be watchers. (d) Hark! Hark! the lark at heaven's gate sings. (e) Why do you stay so long, my lords of I rance? (f) Go you before to Gloucester with these letters. (g) Society has been called the happiness of life. (h) The guardsman defended himself bravely. (i) They that reverence too much old times are but a scorn to the new. (j) I will bring you certain news from Shrewsbury.

In the above sentences pick out the following grammatical constructions. (Indicate the number of the sentence and write the word or words which answer the question.)

- Imperative mood. Abstract noun. Transitive verb. Two relative pronouns. Noun in apposition. Verb in subjunctive mood. Adverb of manner. Relative pronoun. Indirect object. Interjection.
- Write a simple sentence containing a compound subject. Write a simple sentence containing a compound predicate. Write a complex sentence containing an adjective clause. Write a complex sentence containing an adverbial clause of manner. Write a sentence containing a preposition with a compound object. Write a sentence containing an adverb clause of time. Write a sentence containing a noun (or substantive) clause used as the subject of the sentence. Write a complex sentence containing an adverb clause of place. Write a sentence containing an adjective phrase, and an adverb phrase. Write a sentence containing a verb in the passive voice.
- Write sentences containing the following: The preterite (or past) tense (active voice) of the verb "choose." The perfect tense (active voice) of the verb "swim." The pluperfect (or past perfect) tense (active voice) of the verb "burst." The future perfect tense (active voice) of the verb "eat." The perfect tense (active voice) of the verb "know." The present participle of the verb "lie." The perfect infinitive of the verb "study." The perfect participle of the verb "knock." The future tense, passive voice, of the verb "defeat." The future perfect tense, passive voice, of the verb "pay."
- In the passage below, indicate the gender of all the nouns and pronouns by the following device: Under-score once those that are masculine; twice those that are feminine; thrice all those that are neither.

"The bride kissed the goblet, the knight took it up.
He quaffed off the wine, and he threw down the cup,
She looked down to blush, and she looked up to sigh,
With a smile on her lips and a tear in her eye.
He took her soft hand ere her mother could bar,—
"Now tread we a measure!" said young Lochinvar.
So stately her form and so lovely her face,
That never a hall such a galliard did grace;
While her mother did fret, and her father did fume,
And the bridegroom stood dangling his bonnet and plume;
And the bride-maidens whispered, "'Twere better by far
To have matched our fair cousin with young Lochinvar."

- Write sentences containing the following: An Auxiliary verb. The comparative of "recent." The superlative of "bad." The plural "lily." The masculine of "witch." An intransitive verb. -A collective noun. The comparative of "lazy." The plural of "shelf." The plural of "ruby."
- Parse the words in italics in the following sentences: "Some soils, *like the rocky tract called the Estabrooke Country in my neighborhood*, as so suited to the apple, that it will grow *faster in them without any care, than it will* in many places with any amount of *care*."—Henry D. Thoreau.
- Correct all the errors in the following: The man which committed the murder was hung. Who can this letter be from? It is me that he fears. The red rose smells sweetly, but the yellow one does not smell so good. He asked if either of the men could identify their own clothing.
- Punctuate and capitalize the following: it was old dr parr who said or sighed in his last illness oh if i can only live till strawberries come the old scholar imagined that if he could weather it till then the berries would carry him through no doubt he had turned from the drugs and the nostrums or from the hateful food to the memory of the pungent penetrating and unspeakably fresh quality of the strawberry with the deepest longing the strawberry is always the hope of the invalid and sometimes no doubt his salvation it is the first and finest relish among the fruits and well merits dr botelers memorable saying that doubtless god could have made a better berry but doubtless god never did john burroughs.

English composition and English literature.—Candidates will be required:

- By the writing of short themes on subjects chosen by themselves within limits by the examination paper, to prove (a) their ability to spell, capitalize, and punctuate,

and (b) their mastery of the elementary principles of composition, including paragraphing and sentence structure.

2. To give evidence of intelligent acquaintance with three plays of Shakespeare—one comedy, one history, and one tragedy—*The Merchant of Venice*, *Henry V*, and *Macbeth* being especially recommended.

3. To exhibit a fair knowledge of the history of English literature and of the names of the most prominent authors, and of the names of their principal works.

The general character and scope of the examination are indicated by the following:

1. In a few paragraphs (about 250 words) tell the most important facts about the life and works of any *one* of the following authors: Robert Burns, John Milton, John Keats, Edgar Allen Poe, Alfred Tennyson, Charles Dickens.
2. In a paragraph (about 250 words) discuss the Victorian period in English literature, paying attention to the following points: (a) the characteristics of the literature, (b) the chief writers, both in prose and poetry.
3. In a few paragraphs (about 250 words) discuss the Puritan period in English literature, telling what is meant by the term, the object and results of the Puritan movement, the chief writers with their works, and the main characteristics of the literature.
4. Elective question (may be chosen in place of either 2 or 3). Write a few paragraphs (250 words) on the characteristics and importance of the works of the Concord writers, Emerson, Hawthorne, and Thoreau, mentioning the chief works of each.
5. Write two compositions of about 200 words each, selecting your subjects from the following list: (a) The story of the chase. (*Lady of the Lake*—Scott.) (b) Silas Marner's Early Life. (Silas Marner—George Eliot.) (c) The Story of Jessica. (*Merchant of Venice*—Shakespeare.) (d) The Character of Brutus. (Julius Caesar—Shakespeare.) (e) The Story of Ida and the Prince. (*The Princess*—Tennyson.) (f) The Trial of Rebecca. (*Ivanhoe*—Scott.) (g) The Murder of Duncan. (*Macbeth*—Shakespeare.) (h) Character Sketch of the Ancient Mariner. (*The Ancient Mariner*—Coleridge.) (i) Threshing Day on a Western Farm. (j) The Village Drug Store. (k) Along the Wharves in a Seaport Town. (l) An Irrigated Farm. (m) A Cotton Mill. (n) An Accident.

Geography.—Candidates will be required to pass a satisfactory examination in *descriptive geography* and the elements of *physical geography*. A preponderance of weight is attached to a knowledge of the geography of the United States.

In descriptive geography of the United States, candidates should be thoroughly informed as to its general features and boundaries; adjacent oceans, seas, bays, gulfs, sounds, straits, and islands; lakes, the location and extent of mountain ranges; the sources, directions, and terminations of the important rivers, the names of their principal tributaries, and at what points, if any, these rivers break through highlands on their way to the ocean; the water routes of communication from one part of the country to another; the location and termination of important railroad lines; the boundaries of the several States and Territories and their order along the coasts, frontiers, and principal rivers; the locations and boundaries of the island possessions; and the names and locations of the capitals and other important cities of the several States, Territories, and island possessions.

In short, the knowledge should be so complete that a clear mental picture of the whole of the United States is impressed on the mind of the candidate.

In descriptive geography of other countries, candidates should be familiar with the continental areas and grand divisions of water; the earth's surface; the large bodies of water which in part or wholly surround the grand divisions of the land; the capes, from what parts they project and into what waters, the principal peninsulas, location, and by what waters embraced; the parts connected by an isthmus; the principal islands, locations, and surrounding waters; the seas, gulfs, and bays, the coasts they indent, and the waters to which they are subordinate; the straits, the lands they separate, and the waters they connect; the locations of the principal lakes; the locations, boundaries, capitals, and principal cities of the political divisions of the world.

In physical geography, candidates should be familiar with the relief of the earth's surface; the principal mountain systems, the river systems and watersheds; the coastal and lake plains; and the influence of climate, soil, mineral deposits, and other physical features on the resources, industries, commercial relations, and development of a country and its people, especially of the United States.

The following questions indicate the character of the examination:

1. Define (a) Geography, (b) Physical Geography, (c) strait, (d) isthmus, (e) isotherm.
2. In respect of climate, into what zones is the earth's surface divided? Name the circles separating these zones from one another? In what zone are the Philippines?
3. (a) What and where is the International Date Line? (b) In going from San Francisco to Manila is a day lost or gained? Give reasons for answer.
4. How many "times" has the United States? What are they?
5. What waters surround the United States?
6. Is it possible to go from Duluth to Detroit by water? If so, what bodies of water would be passed through?
7. Name the larger islands of the Philippines, and of the Hawaiian Group, respectively. On what island is Manila? Honolulu? Iloilo?
8. Name two great coal regions of the United States.
9. What is (a) the most northern State of the United States? (b) the most southern? (c) the most eastern? (d) the most western?
10. Which of the United States has the longest coast line?
11. Where is the Mohawk Valley?

12. Bound—Michigan, Kentucky, Connecticut.
13. Locate accurately the following cities—El Paso, Albany, Zamboanga, Panama, San Antonio, Kalamazoo.
14. Name the transcontinental railways west of the Mississippi in order from north to south.
15. Name the countries of Central America. Which one of these borders on Mexico?
16. Name in order, beginning at the Isthmus of Panama, the countries of South America that touch on the Caribbean Sea and the Atlantic Ocean.
17. The meridian through Atlanta, Georgia, intersects what South American Republics? Is the continent of South America, as a whole, east or west of the United States?
18. What two countries of South America have no sea coast?
19. A vessel goes from London, England, to San Francisco by the Suez Canal. Through what waters does it pass?
20. What waters connect the Black Sea with the Mediterranean? The Gulf of Aden with the Red Sea?
21. Where does the Danube rise? through what countries does it flow? and where does it empty?
22. What three rivers flow north into the Arctic from Siberia?
23. What mountains lie between France and Spain? Between Tibet and India?
24. Name in order in a clockwise direction the countries bordering on the Mediterranean.
25. Where is—Mount Shasta, Popocatepetl, Chimborazo, Everest, Apo, Fujiyama, Blanc, Mayon.
26. Where and what is—Mukden, Vladivostok, Liberia, Melilla, The Celebes.
27. Locate—Elba, Saint Thomas, Cape Race, Hankow, Formosa, Bonin Islands, Juarez, Zanzibar, Colon, Volga River, Elbe River, Cebu, Seville, Andalusia, Zaragoza, Macedonia, Nepal, Bogota, Beirut, Malta, Macao, Dublin.
28. Name the capitals respectively of—Afghanistan, Portugal, Nebraska, Vermont, French Indo-China, Philippine Islands, Montenegro, Georgia, Oregon, Roumania, Persia, Florida, Java.

History.—Candidates must be thoroughly familiar with so much of the history of the United States, and of ancient Greece and Rome as is contained in good high-school textbooks on these subjects, and must have a good knowledge of the important facts in general ancient history and in the history of medieval Europe to the end of the fifteenth century.

In history of the United States, the examination will include questions concerning early discoveries and settlements; the forms of government in the Colonies; the causes, leading events, and results of wars; important events in the political and economic history of the Nation since its foundation; and the elementary principles of civil government with special reference to the Federal Congress, executive, and judiciary.

In ancient history, the examination will include questions on important persons and events in the legendary and authentic history of Greece and Rome, and on general important facts in the history of other ancient peoples, taking some account also of Greek art, of Greek and Roman literature, and especially of Roman government.

In history of medieval Europe, the greater emphasis will be laid on the period from Charlemagne to the end of the Middle Ages, particularly on events connected with the political and social development of England.

The following questions indicate the character of the examination:

1. (a) Name the two dynasties which existed during the most eventful period of Egyptian history. (b) What arts and sciences were especially cultivated in ancient Egypt?
2. (a) Who were the Phoenicians and what was their chief industry? (b) By whom were they conquered? (c) Mention two of their important colonies.
3. (a) Who were the Medes? (b) What leader overthrew the Medes? (c) Give briefly the wars of conquest of Darius I.
4. (a) Which were the two important States of ancient Greece? (b) Why did the States of Greece not acquire a strong national unity?
5. (a) Who was Draco? What important services did he perform? (b) What was the nature of the reforms of Solon?
6. State concisely the chief significance of the following—(a) Miltiades; (b) Thermopylae; (c) Pericles; (d) Themistocles; (e) Thucydides; (f) Plataea.
7. State clearly what the influence of the Confederacy of Delos was on the history of Athens.
8. (a) What were the immediate causes of the Peloponnesian War? (b) How long did the war last? (c) What was the result?
9. (a) What decisive battle under leadership of Philip of Macedon showed the power of the Macedonian phalanx? (b) Who succeeded to the place and powers of Philip of Macedon? (c) Who were the opposing forces and principal leaders in the battle of Arbela? What was the effect of this battle upon the civilization of western Asia?
10. (a) What was the important political advantage gained by the first plebeian secession in the early history of the Roman Republic? (b) What were the "Laws of the Twelve Tables?"
11. (a) Who was Pyrrhus and what was his ambition? (b) Cause and result of his war with the Romans?
12. (a) What was the immediate cause and what was the final result of the Third Punic War? (b) Discuss briefly the conspiracy of Catiline.
13. (a) What reforms did the Gracchi seek? (b) What revolutionary act did Tiberius Gracchus commit?
14. (a) Name the members of the First Triumvirate. (b) What duties did each member assume and what advantages did each member gain from it?
15. (a) Why did Caesar cross the Rubicon (B. C. 49)? What was the importance of this act? (b) Narrate briefly the events by which Octavius Caesar attained supreme power.
16. (a) Who was Mohammed? (b) What is meant by "the Hegira?" (c) What is the Koran?
17. (a) What questions regarding the civilization of Europe were decided in the battles of Chalons and Tours? (b) Who was the leader of the victorious side in the battle of Tours?
18. (a) How did Duke Pepin become King of the Franks? (b) Who were the leading actors in the restoration of the Empire in the West?
19. (a) In what countries did the feudal period reach its height? What are the main characteristics of feudalism? (b) Give the causes of the decay of feudalism.

20. Identify the following—(a) Battle of Hastings; (b) Peter the Hermit; (c) The Hussites; (d) Hildebrand (Pope Gregory VII); (e) Dante.
21. (a) What were the causes of the Hundred Years' War? (b) What effect did the battle of Crecy have upon feudalism and chivalry?
22. (a) What important instrument was King John of England forced to give his people? (b) Mention some of the important articles of this instrument? (c) What was decided at the battle of Bannockburn?
23. (a) What brought about the union of the two most important States of Spain? (b) What effect did this have on the Moorish power in Spain?
1. State concisely the achievements of—(a) De Narvaez; (b) De Soto; (c) Hudson; (d) La Salle.
2. (a) Where and when was the first permanent English settlement in America made? (b) What arrangement was made for the government of this settlement?
3. (a) When and where did the first colonial assembly in America meet? (b) What was Bacon's Rebellion? (c) When and where was the first permanent English settlement in New England established?
4. (a) What brought the first settlers to Maryland? (b) Who was their leader?
5. (a) What was the immediate cause of the Revolutionary War? (b) What were "writs of assistance?" (c) What was the "Mutiny Act?"
6. (a) When and where did the first Continental Congress meet? (b) What was accomplished by this Congress? (c) Name the original thirteen colonies.
7. (a) Who were the principal leaders in the two battles of Saratoga? (b) What were the effects on the American people of these battles? (c) What was the Wyoming Massacre?
8. (a) What European country was the first to acknowledge the American independence? (b) In what ways did this country aid in bringing the Revolutionary War to a successful close?
9. State the significance of the following in United States history: (a) Shay's Rebellion; (b) Steuben; (c) Alien and sedition laws; (d) Kosciusko.
10. (a) What were the causes of the war with England in 1812? (b) What treaty ended this struggle? (c) Who was President of the United States during this war?
11. By what means, from whom, and during whose Presidency were the following territories obtained for the United States? (a) Louisiana, (b) Florida, (c) Alaska.
12. (a) What was the "Spoils System?" (b) What was the Nullification ordinance passed by South Carolina in 1832?
13. Discuss briefly the nature and importance of the following: (a) The Wilmot Proviso. (b) The Dred Scott Decision. (c) The Fugitive Slave Law.
14. Name the commanders and the results of the following battles: (a) Vicksburg, (b) Fredericksburg, (c) Cold Harbor.
15. Name the Presidents of the United States who have had a second term of office.
16. (a) What various causes underlay the declaration of war against Spain? (b) What important battles on land and sea were fought during the Spanish-American War? (c) What treaty ended this war and what territory was ceded to the United States as a result of it?
17. How is an amendment to the Constitution of the United States made?

PHYSICAL EXAMINATION.

All cadets are examined physically in May of each year, and those found physically disqualified to continue with the course or, in case of the first class, for commission in the Army, are discharged.

VACATIONS AND LEAVES OF ABSENCE.

Academic duties are suspended from the completion of the June examinations until the end of August. During this period cadets live in camp and are engaged in military duties and exercises and in receiving practical instruction in military and other subjects. Academic duties are also suspended from December 24 until January 2, except for those undergoing examination. All duties and exercises, as far as practicable, are suspended on New Year's Day, February 22, May 30, July 4, Thanksgiving Day, and Christmas Day.

Cadets of the first, second, and third classes not undergoing examination are allowed short leaves at Christmas, if their conduct during the preceding year has been satisfactory. Excepting these short leaves for good conduct, cadets are allowed but one leave of absence during the four years' course. This leave is granted to those cadets who have successfully completed the third class course of study, and extends from the middle of June to the 28th of August.

PAY OF CADETS.

The pay of a cadet is \$600 per year and one ration per day, or commutation therefor at 30 cents per day. The total is \$709.50, to commence with his admission to the academy. The actual and necessary traveling expenses of candidates from their homes to the Military Academy are credited to their accounts *after* their admission as cadets.

No cadet is permitted to receive money, or any other supplies, from his parents, or from any person whomsoever, without the sanction of the superintendent. A *most rigid* observance of this regulation is urged upon all parents and guardians, as its violations would make distinctions between cadets which it is the especial desire to avoid; the pay of a cadet is sufficient for his support.

Candidates are authorized to bring with them the following articles: Hairbrush, nailbrush, toothbrush, shoe brush, comb, 8 drawers (summer), 12 handkerchiefs (white), 4 nightshirts or pajamas, 8 socks (black cotton), 6 bath towels, 6 face towels, 1 trunk, 8 undershirts (summer), whisk broom, shaving mug, winter underwear, and athletic uniforms, shoes, and goods.

Cadets are required to wear the prescribed uniform. All articles of their uniform are of a designated pattern, and are sold to cadets at West Point at regulated prices.

DEPOSIT PRIOR TO ADMISSION.

Immediately after admission candidates must be provided with an outfit of uniform, etc., the cost of which is about \$160. This sum, or at least \$100 thereof, *must be deposited with the treasurer of the academy before the candidate is admitted.* It is best for the candidate to take with him no more money than he needs for traveling expenses and for his parents to send the required deposit by draft, payable to the treasurer, United States Military Academy. The deposit is credited at once to the cadet's account. Upon graduation a cadet who has exercised proper economy will have sufficient money to his credit with the treasurer of the academy to purchase his uniform and equipment as an officer.

ACADEMIC DUTIES.

There are two terms of academic instruction: September 1–December 23, and January 2–June 4. A semiannual examination is held December 26–31, and an annual examination June 5–12. At the December examination cadets, who are found to be proficient in subjects they have completed during the preceding term are arranged according to merit in each subject. At the June examination they are similarly arranged and they are also assigned general standing in the class as determined by their standings in the various subjects. When a subject of study is completed during a term an examination concluding the work in that subject is sometimes held. Cadets deficient in studies at any examination are discharged from the academy unless for special reasons the academic board recommends otherwise. Cadets exceeding at any time the maximum number of demerits allowed for six months are reported to the academic board as deficient in conduct.

PROMOTION AFTER GRADUATION.

The attention of applicants and candidates is called to the following provisions of an act of Congress approved May 17, 1886, to regulate the promotion of graduates of the United States Military Academy:

That when any cadet of the United States Military Academy has gone through all its classes and received a regular diploma from the academic staff, he may be promoted and commissioned as a second lieutenant in any arm or corps of the Army in which there may be a vacancy and the duties of which he may have been judged competent to perform; and in case there shall not at the time be a vacancy in such arm or corps he may, at the discretion of the President, be promoted and commissioned in it as an additional second lieutenant, with the usual pay and allowances of a second lieutenant, until a vacancy shall happen.

PROGRAM OF THE COURSE OF INSTRUCTION.

Immediately following is shown the program of the course of instruction adopted by the academic board May 2, 1912, and approved by the War Department May 4, 1912. This program became effective September 1, 1912.

THE ACADEMIC CALENDAR.

First term, September 1–December 23, embraces 95 a. m. and 80 p. m. periods.

Second term, January 2–June 4, embraces 139 a. m. and 109 p. m. periods.

Semiannual examination, December 26–31.

Annual examination, June 5–12.

A. m. periods extend from 7.55 a. m. to 12.30 p. m. except Sundays.

P. m. periods extend from 1.45 to 3.45, except Saturdays and Sundays.

HOURS OF ATTENDANCE.

7.55 to 9.20 a. m.; 9.20 to 10.45 a. m.; 10.30 to 11.30 a. m.; 11.30 a. m. to 12.30 p. m.; (dinner assembly 12.40 p. m.); 1.45 to 2.45 p. m.; 2.45 to 3.45 p. m.

In philosophy and chemistry the following arrangement will govern: Philosophy, 7.55 to 9.20; 10.30 to 11.55. Chemistry, 7.55 to 9; 10.30 to 11.35.

For laboratory work second-class sections attending at 7.55 may be held until 9.55, and sections attending at 10.30 may be held to 12.30.

Division into A and B sections will be observed in first, second, and third classes.

Class.	Subjects.	Time.	Allotment of periods.		
			Time in min-utes.	Num-ber in year.	Total num-ber.
Fourth...	Mathematics.....	a. m.—Daily except alternating whole class last 66 days with surveying. During alternation Tuesday, Thursday, and Saturday to mathematics.	85	12	.....
	Surveying.....	a. m.—Alternating whole class with mathematics last 66 days. During alternation Monday, Wednesday, and Friday to surveying. May 1 to June 4, attendance 7.55 a. m. to 12 noon. Theoretical examination immediately after completion of theoretical course.	15	.....	.....
	Drill regulations.....	a. m.—Saturdays during September, October, November, March, April, and May.	245	33	33
	English and history.....	p. m.—Daily (May to June 4 entire class 1.45 to 2.45)	60	26	.....
	.....do.....	a. m.—Saturdays for lectures in December, January, and February.	60	189	.....
	Gymnasium.....	a. m.—Daily except Saturdays, Oct. 1-Apr. 30. p. m.—Daily except Saturdays May 1-June 4. M., W. and F. 12 m. to 12.40 p. m.; T. and T. 2.45 to 3.45.	60	10	199
Third....	Mathematics.....	a. m.—Daily	45	144	.....
	French.....	a. m.—Daily except last two Mondays, Wednesdays, and Fridays in September.	60	10	.....
	Drawing.....	p. m.—One-half class daily	45	15	.....
	Hygiene.....	p. m.—One-half class daily alternating with drawing for 26 days beginning Sept. 1.	85	225	417
	.....do.....	a. m.—Whole class last two Mondays, Wednesdays, and Fridays in September alternating with French (6 lectures).	60	219	219
	Drill regulations.....	p. m.—One-half class alternating with drawing for 24 days after hygiene.	120	94	.....
Second...	Riding.....	p. m.—One-half class alternating with drawing after drill regulations to Mar. 15.	60	13	.....
	Gymnasium.....	p. m.—After drawing (after 3.45) Nov. 1-Mar. 15, except Wednesdays.	60	6	19
	Philosophy.....	a. m.—Daily except alternating one-half class with drill regulations, Monday to Thursday, inclusive, for two weeks beginning first Monday in April.	60	12	.....
	Chemistry.....	a. m.—Daily except alternating one-half class with drill regulations, Monday to Thursday, inclusive, for three weeks beginning third Monday in April.	60	42	.....
	Drawing.....	p. m.—One-half class daily	45	35	.....
	Drill regulations.....	p. m.—Alternating with drawing for 24 days beginning Sept. 1.	85	221	221
First.....	.....do.....	a. m.—One-half class alternating with philosophy and chemistry as above.	65	219	219
	Spanish.....	p. m.—One-half class alternating with drawing after drill regulations (September).	120	94	188
	Riding.....	p. m.—Alternating with gymnasium after 3.45 Nov. 1-Mar. 15, except Wednesday.	60	12	.....
	Gymnasium.....	p. m.—Alternating with riding after 3.45, Nov. 1-Mar. 15, except Wednesday.	60	10	60
	Engineering.....	a. m.—Daily (one-half class only on Saturday for 8 Saturdays after Apr. 1).	60	82	.....
	Law.....	a. m.—One-half class daily alternating with riding, and with engineering first hour for 8 Saturdays after Apr. 1.	60	35	.....
First.....	Hippology.....	a. m.—Alternating with law 24 days beginning Sept. 1.	45	35	.....
	Riding.....	a. m.—One-half class alternating with law after hippology; entire class Saturdays after 11 a. m. for 8 Saturdays after Apr. 1.	60	12	12
	Ordnance and gunnery ..	p. m.—One-half class alternating with Spanish.	60	104	181
	.....do.....	p. m.—Ten periods for shop work, 1.45 to 3.45, Nov. 1-Mar. 15.	60	94	.....
	Spanish.....	p. m.—Alternating with ordnance and gunnery.	10	10	104
	Gymnasium.....	p. m.—One-half class after 2.45, Nov. 1-Mar. 15, except when attending ordnance shop work	60	94	176
			45	33	249

DEPARTMENT OF TACTICS.

ALL CLASSES.

New cadets, upon reporting for duty, are given Infantry recruit instruction, with gymnastic and calisthenic exercises, until they join the battalion.

Practical instruction is given during the summer encampment, and from September 1 to November 1, and from March 15 to June 1, in Infantry, Artillery, and Cavalry drill regulations, in target practice with the rifle, revolver, mountain gun, and field gun, and in Military Engineering.

During the summer encampment, cadets of the third and fourth classes are also taught swimming and dancing, and those of the first class, the service of seacoast artillery and submarine defense at fortifications. The first, third, and fourth classes participate in exercises in minor tactics, practice marches, problems, and practical field-work, in which the employment of all arms is exemplified.

Practical instruction in fencing and gymnastic exercises and in boxing and wrestling is given to the fourth class from October 1 to June 1, and to the other classes from November 1 to March 15.

Instructions in riding is given to the first class during the encampment and from September 1 to June 1, excepting the month of February; to the second and third classes, from November 1 to March 15, and also to the third class during the summer encampment. Instruction with English pad saddles is given to the first class, and in polo to the first and second classes.

During the academic season recitations in hippology are held for the first class and in drill regulations for the second, third, and fourth classes. Instruction is also given in writing orders and in solving problems involving the disposition of small forces.

Previous to graduation, lectures are given the first class upon uniforms and equipments, and upon etiquette and customs of the service.

Textbooks.

Coast Artillery Drill Regulations, U. S. Army.	Mountain Artillery Drill Regulations, U. S. Army.
Infantry Drill Regulations, U. S. Army.	Cavalry Drill Regulations, U. S. Army.
Field Artillery Drill Regulations, U. S. Army.	Elements of Hippology. Marshall.

Books of reference.

U. S. Army Regulations.	Manual of Guard Duty, U. S. Army.
Field Service Regulations, U. S. Army.	Manual of Gymnastic Exercises. Koehler.
Small Arms Firing Manual, U. S. Army.	Regulations for Field Maneuvers, U. S. Army.
Drill Regulations for Machine Gun, Infantry.	Manual of Instruction in Pack Transportation.
Drill Regulations for Machine Gun, Cavalry.	Manual of the Bayonet.
Regulations, U. S. M. A.	

Issued to first class before graduation.

U. S. Army Regulations.	Paymaster's Manual, U. S. A.
Manual of the Subsistence Department, U. S. A.	Regulations for the Uniform of the U. S. A.
Manual of Quartermaster's Department, U. S. A.	Manual of Courts-Martial, U. S. A.
	Army Register, U. S.
	Engineer Field Manual.

DEPARTMENT OF CIVIL AND MILITARY ENGINEERING.

FIRST CLASS.

The course in civil and military engineering and the art of war is confined to the first class year.

The course in civil engineering begins September 1 and is completed during the first term, which closes with the Christmas holidays. It comprises brief treatises on the mechanics of civil engineering, framed and masonry structures, the materials of engineering, water supply and sewerage.

The course in military engineering and the art of war begins on January 2 and closes on the 3d of June. Military engineering embraces the study of field and permanent

fortifications and siege works. The art of war embraces the study of the organization of armies, employment of the different arms in combination, logistics and strategy. To familiarize the students with its principles, lectures are delivered on military subjects and the principal operations of about 20 selected campaigns are studied. During this course the students are taken to the battlefield of Gettysburg to familiarize them with the effects of topography on the employment of troops in the field.

Textbooks.

Civil Engineering. Fiebeger.	Army Organization. Fiebeger.
Field Fortifications. Fiebeger.	Siege Works. Mercur.
Permanent Fortifications. Fiebeger.	Field Service Regulations. U. S.
Elements of Strategy. Fiebeger.	Campaign of Gettysburg. Fiebeger.

Books of reference.

Campaigns and Battles. Department.	Cambria Steel.
Story of Civil War. Ropes.	

The department has a well-selected reference library on civil engineering, military engineering, and the art of war.

DEPARTMENT OF NATURAL AND EXPERIMENTAL PHILOSOPHY.

SECOND CLASS.

The course in natural and experimental philosophy begins with and continues throughout the third academic year. Mechanics is studied during the first term. The text used is Gordon's "Mechanics." Many of the principles are illustrated by apparatus in the lecture and section rooms, and the students are required to repeat and explain these experiments. The course aims to be as complete as possible with the limitation that it can be properly covered in a term of about 90 to 100 days by students having a proficient knowledge of the calculus; the treatment is sufficiently mathematical to furnish a confident basis for advanced work in the technical staff after graduation.

During the second term about 120 lessons are allotted to this department. The first half of this time is devoted to the subjects of sound and light. The authorized textbook is Gordon's "Sound and Light."

Astronomy is studied in the remainder of the second term. The texts used are Young's "General Astronomy" and Michie and Harlow's "Practical Astronomy." The principal aim of this course, in addition to its important value in educational development, is to furnish an ample basis for the establishment of stations in explorations and surveys.

The class attends daily throughout the year, except eight days, during which half the class attends daily.

Textbooks.

Sound and Light. Gordon.	Practical Astronomy. Michie and Har-
Mechanics. Gordon.	low.
General Astronomy. Young.	

Numerous standard works on the general subjects covered by the course are available for reference.

DEPARTMENT OF MATHEMATICS.

THIRD AND FOURTH CLASSES.

The course in mathematics begins with the fourth class year and continues through the third class year.

In the fourth class year, algebra is completed in alternation; first with geometry, then with trigonometry. Plane analytical geometry is begun.

In the third class year, plane and solid analytical geometry and descriptive geometry are completed in alternation. The calculus and least squares finish the course.

The course in algebra covers the entire subject as generally taught in colleges, but the student is expected to have already mastered elementary algebra to include the progressions and the solution of the quadratic equation. The course in elementary geometry includes the books that relate to the plane and those that relate to space,

but the student is expected to have mastered the former. Plane and spherical trigonometry includes the complete solution of the plane and spherical triangles. The course in analytical geometry includes the discussion of the general equation of the second degree in the plane and the particular forms of the equation of the second degree in space.

Descriptive geometry includes the orthographic projections of the right line, the plane, ruled surfaces and surfaces of revolution, tangent planes and intersections of surfaces. It also takes the subjects of shades and shadows, perspective, isometric projections and spherical projections.

The course in differential and integral calculus covers the ground of the usual college textbook, including briefly the subject of ordinary differential equations.

Textbooks.

Elements of Geometry. Phillips and Fisher.	Elements of Analytical Geometry (Solid). Smith and Gale.
Advanced Course in Algebra. Wells.	Descriptive Geometry. Church.
Quadratics and Beyond. Fisher and Schwatt.	Linear Perspective. Pillsbury.
Elements of Plane and Spherical Trigonometry. Crockett.	Differential and Integral Calculus. Granville.
Logarithmic Tables. Newcomb.	Integral Calculus. D. A. Murray.
Conic Sections, Coordinate Geometry. C. Smith.	Differential Equations. D. A. Murray.
Coordinate Geometry. Fine and Thompson.	Method of Least Squares. Johnson.

DEPARTMENT OF CHEMISTRY, MINERALOGY, AND GEOLOGY.

SECOND CLASS.

This department embraces two branches of physics not included in its title, namely, heat and electricity.

The course begins September 1 of the third academic year and extends throughout this year; exercises, recitations, laboratory work or lectures take place on all weekdays.

Commencing September 1, general chemistry, alternating with lessons in heat, occupy the time until the close of the term in December, recitations or other exercises being had daily.

During this term all members of the class whose progress, as shown by their recitations, warrants it, are given laboratory practice in chemistry. This practice begins with chemical manipulations and proceeds in the usual general order of elementary laboratory work. The laboratory exercises are 1 hour and 50 minutes long. It is generally possible to give all parts of the class some laboratory experience; the amount of this work, however, varies with the aptitude of the student from a few hours to 55 or 60 hours.

This term closes with an examination upon the essential parts of the entire course which all cadets who have not shown a required proficiency in daily work must take.

In chemistry the course is a descriptive general one, based upon a concise statement of the more essential principles of chemistry, and includes that class of information deemed most important to nonspecialists, together with an accurate and logical treatment of many useful applications of chemistry.

The course in heat is short, but it is a comprehensive elementary course intended to embrace what is most applicable to subsequent work at the academy and what is most useful in general education.

Beginning January 2 the daily exercises alternate between geology, mineralogy, and electricity. This term also closes with an examination, covering the essential parts of the subjects studied during the term, which all cadets who have not shown a required proficiency in daily work must take.

The course in geology is a brief but scientific presentation of the essential elements of this branch of science.

The mineralogy is an eminently practical course consisting of the descriptive study and the practical determination of the important minerals. The lithological and paleontological part of geology is accompanied in study by the continued practical examination of the objects described.

The course in electricity is a brief exposition of the leading electrical phenomena and their relations to each other. It includes a study of the general principles of the subject and of the typical machines, generators, motors, and transformers, together with

the more important uses of electricity. The laboratory exercises give experience with a number of the machines and in the use of a great variety of apparatus employed in the numerous forms of electric measurements. In this term the laboratory work is a part of the electrical course and all cadets enter the laboratory. All laboratory work is performed under the immediate supervision of an instructor.

•
Textbooks.

Elementary Lessons in Heat. Tillman.	Elements of Geology. Le Conte.
Descriptive General Chemistry. Tillman.	Important Minerals and Rocks. Tillman.
Practical Chemistry. (Laboratory Guide.) Clowes.	Elements of Electricity. Robinson.

During all terms standard works on the respective subjects are available for reference both to cadets and instructors.

DEPARTMENT OF DRAWING.

THIRD AND SECOND CLASSES.

The course in drawing extends through the third and second class years, attendance on alternate afternoons for a period of two hours during the full academic year.

The order of instruction is as follows:

Third-class year.

1. Elementary freehand perspective drawing from blocks and objects.
2. Use of drawing instruments.
3. Problems in plane geometry.
4. Problems in descriptive geometry.
5. Lettering. Exercises in this subject continue throughout the course.
6. Building construction drawing.
7. Freehand mechanical, perspective, and memory drawing.

Second-class year.

1. Elementary problems in third-angle projection.
2. Isometric projection of framed structure.
3. Machine drawing, third-angle projection.
4. Assembly and working drawings from models.
5. Topographical sketching and drawing.

Instruction is mainly through a loose-leaf system of printed instruction sheets covering the various drawings and phases of the work. These are supplemented by short section-room lectures and blackboard illustrations when necessary. Personal instruction is given when needed.

Department pamphlets on Framing, The Steam Engine, and Military Topography are used in connection with the instruction in these subject. They will shortly be replaced entirely by the system of printed instruction sheets.

DEPARTMENT OF MODERN LANGUAGES.

THIRD, SECOND, AND FIRST CLASSES.

The course in modern languages comprises instruction in French and in Spanish.

FRENCH.

Third class.

Instruction is given in reading, in composition, and in conversation. The course opens September 1, and continues until June 4, some 219 lessons in all.

SPANISH.

Second and first classes.

Instruction is given in reading, in composition, and in conversation, to which special attention is paid. The course opens October 4, of the second-class year and closes June 4 of the first-class year, 176 lessons all told.

Third class.

The present textbooks are:

French.—Martin's French Verbs.

Elementary French, Aldrich and Foster.

Elements of French Pronunciation, Jacobs. Bercy's La Langue Française.

French Prose Composition, C. Fontaine. Guerlac's Standard French Authors.

Advanced French Prose Composition, François. Potter's Dix Contes Modernes.

Cameron's Tales of France.

Marchand's French Idioms. Revue Militaire des Armées Étrangères.

Labiche and Martin's Voyage de M. Perrichon.

Dike's Scientific French Reader.

Molière's L'Avaré.

French Conversation Exercises.

Second and first classes.

Spanish.—Spanish Verb and Spanish Pronunciation. Traub, 2d Edition.

Spanish Grammar. Olmstead & Gordon. Abridged.

Crawford's Spanish Composition.

Cuentos Selectos by Enrique Pérez Escrich.

Cuentos Selectos by Antonio de Trueba.

Hojas Selectos (Spanish Magazine).

"A B C" Spanish Daily Newspaper.

Spanish Conversation Exercises and Idioms.

Willcox. A Reader of Scientific and Technical Spanish.

Books of reference.

French.—French Pronouncing Dictionary. Spiers and Surene.

Military Technical Dictionary. Willcox.

Spanish.—New Spanish-English and English-Spanish Dictionary, by Cuyás. Appleton.

DEPARTMENT OF LAW.**FIRST CLASS.**

The course in law covers the following subjects:

- | | |
|-------------------------|-----------------------|
| 1. The elements of law. | 3. International law. |
| 2. Constitutional law. | 4. Military law. |

To illustrate principles in the text-books cadets are required to recite on numerous cases from the reports. Lectures are also given upon the subjects taught, so far as the limits of time allotted to this course permit.

Textbooks.

The Elements of Law, Davis, G. B.

Constitutional Law, Davis, E. G.

International Law, Davis, G. B.

Military Law, Dudley.

Books of reference.

There is a reference library in the department of about 2,500 volumes, accessible to the cadets.

DEPARTMENT OF PRACTICAL MILITARY ENGINEERING, MILITARY SIGNALING, AND TELEGRAPHY.**FOURTH, THIRD, AND FIRST CLASSES.**

Fourth class.—This class is given an elementary course in the theory and practice of surveying, instruction in this subject alternating with mathematics during the last 66 recitation days of the academic year. From May 1 to June 4 the entire morning is devoted to practical instruction in the methods of surveying and in the use and adjustment of instruments. During this period cadets apply in the field the principles and methods taught them in their theoretical study of the subject. The course includes instruction in the use of chains and tapes, in profile and differential leveling and in earthwork computations, in the use of compass, plane table, transit and stadia with special reference to the employment of these instruments in military topographic surveying. The slide rule is used to facilitate the work of computation, and the principles upon which it is based are discussed during the theoretical course.

Third class.—During the period of the summer encampment the cadets of this class receive practical instruction in military field engineering and military signaling. The course in field engineering comprises knots and lashings, rowing, construction of floating bridges with wooden pontoons, canvas pontoons and rafts, and instruction in military camp expedients. The course in signaling is limited to visual means only, including the flag, the heliograph and the acetylene lantern. The International Morse Code is applied in the transmission of short messages both plain and cypher.

Simple exercises in topographic and hydrographic surveying are also given.

First class.—During the summer months cadets of the first class are instructed in military reconnoissance and map making. This work follows close upon the fundamental instruction in the same subject given in the department of drawing. A portion of the time is devoted to instruction in building in pile, trestle, and pontoon bridges and improvised methods of crossing streams.

In the fall the course is extended to include the construction and operation of simple appliances used in field engineering, the erection of spar and truss bridges and the use of explosives in military demolitions.

The spring course is on field fortification work including the principles of locating, tracing and profiling field works, the construction of trenches, revetments, obstacles, head cover, splinter and bomb proofs. This instruction is arranged in a progressive series of exercises resulting finally in the construction of a section of a simple infantry redoubt.

Military signaling is taught this class in both the fall and spring periods; the work covers the construction and operation of field-wire and buzzer lines and the radio-communication equipment.

Textbook.

Theory and Practice of Surveying (17th Edition). Johnson-Smith.

Books of reference.

Plane Surveying. Tracy.	The Slide Rule. Alexander.
The Engineer Field Manual. Office of the Chief of Engineers, U. S. A.	The Slide Rule. Clark.
Signal Book, U. S. Army. Office of Chief Signal Officer, U. S. A.	

DEPARTMENT OF ORDNANCE AND GUNNERY.

FIRST CLASS.

The subject of ordnance and gunnery is studied by the cadets of the first class throughout the academic year.

The course of instruction covers the principles involved in the construction and use of war material. It is broadly divided into three parts—the theoretical, the descriptive, and the practical. The theoretical part includes the study of the action of explosives, the study of interior and exterior ballistics, the theories of gun and carriage construction, and the principles of gunnery. The theoretical part of the course is not the same for all cadets, those showing the necessary proficiency taking a special course in the time devoted by the remainder of the class to review work.

The descriptive part of the course covers the processes of manufacture of powders, guns, projectiles, and armor; and describes the small arms, cannon, machine and rapid-fire guns in use in the United States service, with the carriages, ammunition, and accessory appliances required for their service. The department is well supplied with models, which are used in conjunction with the text.

The practical part of the course covers the operation of machines and appliances used in the fabrication of modern ordnance, the latter work being in effect a short but valuable course in manual training.

In connection with the course, visits are made to Watervliet Arsenal, where the processes of gun construction are observed, and to the Ordnance Proving Ground at Sandy Hook, where actual firing from the several classes of guns are observed, including usually one or more shots against armor, and where the latest developments in war material are seen.

Textbooks.

Ordnance and Gunnery. Lissak.	Stresses in Wire-Wrapped Guns and in
Exterior Ballistics. O'Hern.	Gun Carriages. Ruggles.

Books of reference.

Ballistic Tables. Ingalls.
Mathematical Tables. Newcomb.

Publications of Ordnance Department,
U. S. Army.

DEPARTMENT OF MILITARY HYGIENE.**THIRD CLASS.**

The course in military hygiene begins September 1. It consists of 6 lectures and 13 recitations.

The course covers the essential points in the care of troops, particular attention being paid to the following:

Personal hygiene; exercise and physical training; the selection of recruits; preventable diseases; clothing and equipment; the water supply; foods and their preparation; the disposal of wastes; the sanitation of posts and barracks; the sanitation of camps, marches, and battlefields; the hygiene of hot and cold climates; the sanitary duties of line officers; venereal diseases; the nature and effects of alcohol and other narcotics.

During the summer camp the first class is instructed in the use of the first-aid packet and the treatment of surgical emergencies. On marches, at the end of each day, the medical officer discusses practical matters from the viewpoint of the military sanitarian.

Textbooks.

A Compend of Military Hygiene and Sanitation. Keefer.

Reference books.

Military Hygiene. Havard.
Theory and Practice of Military Hygiene. Munson.

Military Hygiene. Woodhull.
Practical Hygiene. Harrington.

DEPARTMENT OF ENGLISH AND HISTORY.**FOURTH CLASS.**

The course in English and history begins with the fourth class in September and continues throughout the academic year, the whole class attending daily except Saturday (Saturdays also for lectures in December, January, and February). The class is divided into two parts, which alternate in reciting English and history.

In English the course of instruction is planned to inculcate the essential principles of rhetoric, both by study of the textbook and by frequent practice in the various forms of composition (including practice in personal and official correspondence), to create an intelligent appreciation of the best in English literature by the study of selected literary masterpieces, and to impart a knowledge of the important facts in the history of English literature and language by the study of a textbook and by lectures.

In history the course of instruction is planned to acquaint the student with the political, social, and economic history from the end of the Middle Ages to the present day, to make him familiar with the fundamental principles of civil government, with special reference to the United States, and to give him knowledge of various typical forms of modern, national, and municipal governments.

*Textbooks.***ENGLISH.**

English Composition in Theory and Practice (new and revised edition). Henry S. Canby and others.
Palgrave's Golden Treasury.
Shakespeare's Works.
Tennyson's Poetical Works.
History of English Literature by W. J. Long.

The Major Dramas of Sheridan.
Selections from Addison.
Selections from Macaulay.
Selections from Stevenson.
Pinero's The Thunderbolt.

HISTORY.

The Development of Modern Europe, Vol. I, J. H. Robinson and C. A. Beard.	Introduction to Political Science. R. G. Gettell.
Europe since 1815. C. D. Hazen.	

THE LIBRARY.

Cadets and officers have free access to the library, which comprises over 92,000 books, maps, and manuscripts. The collection contains substantially all standard books on the subjects taught in the academy and is especially complete in military subjects. Its card catalogues (about 327,000 cards) are arranged with the special object of saving the time of cadets. The library is open on week days from 8 a. m. to 7.30 p. m.; Saturdays from 8 a. m. to 9.30 p. m.; on Sundays and holidays from 2 to 6 p. m.

